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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,057	10/05/2001	Shih-Jong J. Lee	SV13	3894

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EXAMINER
HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/972,057	LEE, SHIH-JONG J.
		Examiner	Art Unit
		Joseph P. Hirl	2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>05 October 2001</u>.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-24</u> is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-24</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on <u>05 October 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All   b)☐ Some * c)☐ None of:

  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. _____.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>100501</u>.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-24 are pending in this application.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As p approaches a large number, the classification reliability to an input sample X_{input} is invariant and therefore makes $cr(X_{input})$ *non discriminate or indefinite.*

4.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5.   Claims 7, 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. N_c is related to "class c" which is not enabled by the specification @ p 6, l 12.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7.   Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. While the problem maybe trivial, the invention maybe implemented using pencil and paper and is therefore not embodied in the technical arts.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-10, 12-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berry et al in view of Acknowledged Prior Art (Data Mining Techniques, referred to as **Berry**; specification, p 10, l 15-16, referred to as **APA**).

Claim 1

Berry teaches a) Input a decision tree (**Berry**, p 252, l 9); (b) Input a set of
training samples (**Berry**, p 253, l 6-7); (c) Determine statistics from the training samples
for at least one non-terminal node (**Berry**, p 254, l 1-37; p 255, l 1-11); (d) Determine
statistics from the training samples for at least one terminal node (**Berry**, p 255, l 27-
28); (e) select regulation parameters (**Berry**, p 254, l 1-37; p 255, l 1-11).

Claim 2

Berry does not teach the statistics for at least one non-terminal node include
mean distance. APA does teach the statistics for at least one non-terminal node include
mean distance (**APA**, p 10, l 15-17). It would have been obvious to one of ordinary skill
in the art at the time of the invention to modify the teachings of Berry to establish
statistical metrics to include mean distance. One of ordinary skill in the art would have
been lead to make such a modification since statistical techniques provide useful tools
to assess performance of data mining techniques.

Claim 3

Berry does not teach the statistics for at least one non-terminal node include
distance standard deviation. APA does teach the statistics for at least one non-terminal
node include distance standard deviation (**APA**, p 10, l 15-17). It would have been
obvious to one of ordinary skill in the art at the time of the invention to modify the
teachings of Berry to establish statistical metrics to include distance standard deviation.
One of ordinary skill in the art would have been lead to make such a modification since

statistical techniques provide useful tools to assess performance of data mining

techniques.

Claim 4

Berry teaches the statistics for at least one terminal node include the likelihood

value for a class (**Berry**, p 254, l 4-10; Examiner's Note (EN): likelihood is similar to

probability which is similar to diversity).

Claim 5

Berry teaches (a) Input a sample (**Berry**, p 253, l 6); (b) Determine the likelihood

values for at least one non-terminal node (**Berry**, p 255, l 6-11); (c) Determine the

likelihood value for a branch to at least one terminal node (**Berry**, p 255, l 6-11); (d)

Determine the confidence value for at least one class (**Berry**, p 256, l 4-7; EN:

confidence is synonymous to error rate).

Claim 6

Berry teaches the likelihood values for at least one non-terminal node comprises

a likelihood value for descending through the left branch and a likelihood value for

descending through the right branch (**Berry**, p 254, l 4-10; EN: likelihood is similar to

probability which is similar to diversity and the binary splits are left and right).

Claim 8

Berry teaches (a) Determine the projected tree accuracies for a plurality of

depths and a plurality of regulation parameter values (**Berry**, p 256, l 4-7); (b) Select the

optimal depth that yields the highest projected tree accuracy (**Berry**, p 255, l 6-11; EN:

optimum depth is established by diversity provided by the best splitter which established

levels or depth); (c) Use the optimal regulation parameter value for the optimal depth

(**Berry**, p 253, l 6-12; p 254, l 1-37; p 255, l 1-11).

Claim 9

Berry teaches (a) Construct a regulation tree up to a given depth (**Berry**, p 253, l

6-12; p 254, l 1-37; p 255, l 1-11); (b) Determine the projected tree accuracy (**Berry**, p

256, l 4-7); (c) Determine a regulation parameter value based on projected tree

accuracy (**Berry**, p 254, l 14-28).

Claims 10, 12

Berry teaches (a) Input a training sample (**Berry**, p 253, l 6); (b) Input the true

class of the training sample (**Berry**, p 248, Table 12.1); (c) Classify the input training

sample using a crisp decision method to determine its associated terminal node (**Berry**,

p 248, l 3-12); (d) Update terminal node statistics (**Berry**, p 248, l 3-12).

Claim 13

Berry does not teach the non-terminal node statistic include mean distance and

distance standard deviation. APA does the non-terminal node statistic include mean

distance and distance standard deviation (**APA**, p 10, l 15-17). It would have been

obvious to one of ordinary skill in the art at the time of the invention to modify the

teachings of Berry to establish statistical metrics to include mean distance and distance

standard deviation. One of ordinary skill in the art would have been lead to make such

a modification since statistical techniques provide useful tools to assess performance of

data mining techniques.

Claim 14

Berry teaches (a) Perform new regulation tree construction (**Berry**, p 253, l 6-12;

p 254, l 1-37; p 255, l 1-11); (b) Perform a compound tree update (**Berry**, p 253, l 6-12;

p 254, l 1-37; p 255, l 1-11; EN: such is repeating the process since the old tree remains

with its non-terminal and terminal nodes and new trees are created with the new data;

see specification @ p 18, l 3-11).

Claim 15

Berry teaches (a) Input at least one sample from a new class (**Berry**, p 253, l 6);

(b) Check to confirm the sample size is greater than the minimal required sample size

for the new class (**Berry**, p 254, l 4-11); (c) Construct a new compound tree for all

existing classes and the new class (**Berry**, p 253, l 6-12; p 254, l 1-37; p 255, l 1-11).

Claim 16

Berry teaches (a) Input a new sample and its class (**Berry**, p 253, l 6); (b) Update

all trees trained to include the input class (**Berry**, p 253, l 6-12; p 254, l 1-37; p 255, l 1-

11; EN: since this is not a new tree, the input class is resident in the old tree and the

update or current information is a repeat of the initial process).

Claim 17

Berry teaches (a) Input a sample to be applied (**Berry**, p 253, l 6); (b) Apply the

sample to all trees (**Berry**, p 253, l 6-12; p 254, l 1-37; p 255, l 1-11; EN: repeat the

initial process); (c) Combine the results from all trees (**Berry**, p 253, l 6-12; p 254, l 1-

37; p 255, l 1-11; EN: save each process).

Claim 18

Berry teaches (a) input a set of training samples (**Berry**, p 253, I 6); (b) for a non-terminal node of the tree having two descending terminal nodes, determine the accuracies for identical training samples under two separate nodes or combined node conditions (**Berry**, p 257, I 1-5; EN: the per leaf penalty has associate non-terminal nodes that together identify weak branches); (c) if combined node accuracy is greater than the two separate node accuracy, prune the terminal nodes by combing the two terminal nodes and converting the associated non-terminal nodes into one terminal node (**Berry**, p 257, I 1-13; p 258, I 1-3; EN: pruning of $\alpha 1$ resulting in $\alpha 2$ is such an example).

Claim 19

Berry teaches combing the two terminal nodes combines there sample counts (**Berry**, p 256, I 33-35; p 257, I 1; EN: pruning removes branches but does not remove other data meaning that the related node has the combination of sample counts)

Claims 20, 21

Berry teaches (a) Input a set of training samples (**Berry**, p 253, I 6); (b) Generate a new weight for each training sample (**Berry**, p 253, I 6-12; p 254, I 1-37; p 255, I 1-11); (c) Generate a new tree using the new weight (**Berry**, p 253, I 6-12; p 254, I 1-37; p 255, I 1-11).

Claim 22

Berry teaches (a) Input a sample to be applied (**Berry**, p 253, I 6); (b) Classify the

input sample by the first tree (**Berry**, p 253, I 6-12; p 254, I 1-37; p 255, I 1-11); (c) If the

classification reliability > threshold, use the current result as the final result and stop

(**Berry**, p 258, Fig. 12.9); (d) Else, classify the input sample by the focus tree and use

the new result as the final result (**Berry**, p 258, I 4-13).

Claim 24

Berry teaches repeating multiple times to create multi-stage focusing trees

(**Berry**, p 253, I 6-12; p 254, I 1-37; p 255, I 1-11; EN: all trees are multi-staged (levels

via nodes) and are focusing since there are leaves that represent terminals ... end

points).

Examination Considerations

10.   The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light

of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44USPQ2d 1023,

1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in

the claim are not read into the claim. *In re Prater,* 415 F.2d, 1393, 1404-05, 162 USPQ

541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The

Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Examiner will reference prior art using terminology familiar to one of ordinary skill in the

art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

11.   Examiner's Notes are provided to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

13.   Examiner's Opinion: Paras 10. and 11. apply. The Examiner has the obligation and full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

14.   The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

   - Schneider, U.S. Patent 5,892,801

   - Beigi et al, U.S. Patent 6,684,186

   - Beigi et al, U.S. Patent 6,748,356

   - Apte et al, U.S. Patent 6,253,169

15.   Claims 1-24 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure

should be directed to the Examiner, Joseph P. Hirl, whose telephone number is

(703) 305-1668. The Examiner can be reached on Monday – Thursday from

6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, Anthony Knight can be reached at (703) 308-3179.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of

"Proposed" or "Draft" for the desk of the Examiner).

Note: During the last two weeks of October 2004, Art Unit 2121 will move to

Carlyle, Randolph Building, 5th floor and my phone and fax number will change to: 571-

272-3685 and 571-273-3685, respectively. Similarly, Anthony Knight's phone and fax

numbers will change to: 571-272-3687 and 571-273-3687.

Joseph P. Hirl

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September 27, 2004